being subjected to substantially the same search, perhaps by different Examiners on different occasions, with the resultant burden on the Patent and Trademark Office. Accordingly, it is respectfully requested that the Examiner reconsider the requirement for restriction and allow the claims presently in the application to be prosecuted in a single application.

Nonetheless, in order to comply with the requirements of 37 C.F.R. § 1.143, Applicants provisionally elect the claims of Group I, namely Claims 1-68, 107-124, 127-141, 144, 145, 170, 173, 174 and 177.

PRELIMINARY AMENDMENT

Prior to examination on the merits, Applicants respectfully request that the above-identified application be amended in the following manner:

IN THE CLAIMS:

Please cancel Claims 114 and 134 without prejudice to or disclaimer of the subject matter contained therein.

Please amend Claims 1, 4, 10, 15-18, 22-23, 25-27, 29-36, 45, 50-52, 66, 107-113, 115-124, 127-133, 135-139, 170, 173-174 and 177, as follows. A marked-up version of Claims 1, 4, 10, 15-18, 22-23, 25-27, 29-36, 45, 50-52, 66, 107-113, 115-124, 127-133, 135-139, 170, 173-174 and 177, showing the changes being made thereto, is attached. Note that all claims currently elected in response to the restriction requirement are being reproduced below for the Examiner's convenience.

1. (Amended) A method of processing data defining first polygons which approximate at least part of a curved three-dimensional surface to produce second polygons for use in rendering an image of the surface, the method including for each first polygon the processing operations of:

A1

defining a respective surface patch to approximate the part of the object surface represented by the first polygon;

dividing the first polygon into a plurality of notional polygons;

calculating a respective normal vector for each vertex of each notional polygon; and

for each notional polygon, defining a said second polygon for rendering using the surface patch of the first polygon and the calculated normal vectors for the vertices of the notional polygon to determine the positions of the vertices of the second polygon in three dimensions.

NE

2. (Unamended) A method according to claim 1, wherein the first polygons approximating the curved three-dimensional surface are triangular, and a Bernstein-Bezier triangular patch is defined as the surface patch for each first polygon.

3. (Unamended) A method according to claim 2, wherein a cubic Bernstein-Bezier triangular patch is defined for each first polygon.

121

A2

4. (Amended) A method according to claim 1, wherein the operation of defining a surface patch for a first polygon comprises calculating control values at control points for the first polygon to define the surface patch.

5. (Unamended) A method according to claim 4, wherein the control values for each vertex of the first polygon are set to zero.

NE

6. (Unamended) A method according to claim 4, wherein the control values for control points along an edge other than vertices are calculated by determining the distance from the control point of the tangent plane at the nearest vertex in a predetermined direction.

7. (Unamended) A method according to claim 6, wherein the predetermined direction is based on the direction of the normal at the nearest vertex alone.

8. (Unamended) A method according to claim 6, wherein the predetermined direction is based on the normal at each vertex defining the ends of the edge on which the control point lies.

9. (Unamended) A method according to claim 1, wherein each surface patch is a Herron patch.

128

10. (Amended) A method according to claim 1, wherein, in the operation of dividing a first polygon into notional polygons, the division is performed in dependence upon an average area of at least some of the first polygons in a current frame of image data or a previous frame of image data.

A3

11. (Unamended) A method according to claim 1, wherein, each first polygon is divided into the same number of notional polygons.

12. (Unamended) A method according to claim 11, wherein the number of notional polygons is determined by testing each first polygon to determine a division number therefor defining a number of notional polygons, and selecting the highest division number.

NE

13. (Unamended) A method according to claim 11, wherein:

processing is performed for each frame of image data to be generated to determine a level of subdivision defining the number of notional polygons into which each first polygon is to be divided;

data defining the second polygons produced for rendering is stored for future use when it is generated for a level of subdivision for which data is not already stored; and

the stored data is used when a frame of image data is to be generated for a level of subdivision for which data is already stored.

14. (Unamended) A method according to claim 1, wherein each said second polygon is a triangle.

15. (Amended) A method according to claim 1, wherein, in the operation of defining a second polygon for a notional polygon, vertices for the second polygon are calculated in dependence upon the distance of the surface patch above each vertex of the notional polygon and in dependence upon the calculated normal vectors for the vertices of the notional polygon.

A4

16. (Amended) A method according to claim 15, wherein, in the operation of defining a second polygon for a notional polygon, vertices for the second polygon are calculated by:

for each vertex of the notional polygon, setting the position of a vertex for the second polygon at the point which lies a distance from the vertex of the notional polygon equal to the distance of the surface patch above the vertex of the notional polygon in the direction of the normal vector calculated for the vertex of the notional polygon.

17. (Amended) A method according to claim 15, wherein a forward differencing technique is used to calculate the distance of the surface patch above each vertex of each notional polygon.

130

18. (Amended) A method according to claim 1, further comprising the processing operation of filling gaps between the second polygons generated for rendering.

19. (Unamended) A method according to claim 18, wherein gaps are filled by moving vertices of second polygons generated for rendering.

NE

20. (Unamended) A method according to claim 18, wherein gaps are filled by connecting vertices of second polygons to form further polygons for rendering.

21. (Unamended) A method according to claim 18, wherein gaps to be filled are identified using a database defining, for each edge of each first polygon, the relationship between the normals at each vertex of the first polygons which share the edge.

AB

22. (Amended) A method according to claim 1, wherein the operation of defining a surface patch is performed by processing data in object space, and the operation of defining second polygons is performed in viewing space.

23. (Amended) A method according to claim 1, further comprising the processing operation of calculating lighting values for each second polygon by evaluating a polygon lighting equation for at least one of ambient, diffuse and specular light.

131

NE

24. (Unamended) A method according to claim 23, wherein polygon lighting equations are evaluated to define a respective second surface patch for at least some of the first polygons, and lighting values are calculated for the second polygons thereof using the second surface patches.

A6 Cont

25. (Amended) A method according to claim 23, wherein, in the operation of calculating lighting values, the number of notional polygons into which each surface patch is divided is determined, and:

(i) if the number of notional polygons is less than a predetermined number, a lighting value is calculated for each vertex of the second polygons by evaluating the lighting equation for each vertex; and

(ii) if the number of notional polygons is greater than a predetermined number, a respective second surface patch is calculated for each first polygon, and a lighting value is calculated for each vertex of the second polygons using the second surface patches.

26. (Amended) A method according to claim 24, wherein the operation of calculating a second surface patch for a first polygon includes:

(i) evaluating the lighting equation to calculate a lighting value at a plurality of control points for the first polygon; and

(ii) calculating values defining the second surface patch such that the surface patch interpolates the lighting values calculated at the control points.

27. (Amended) A method according to claim 24, wherein, in the operation of using a second surface patch to calculate a lighting value for a vertex of a second polygon, the lighting value is calculated using the height of the second surface patch above the first polygon at the vertex of a notional polygon which corresponds to the vertex for which the lighting value is to be calculated.

A6 cont

28. (Unamended) A method according to claim 27, wherein a forward differencing technique is used to calculate the height of the second surface patch above each vertex of each notional polygon.

NE

29. (Amended) A method according to claim 1, further comprising the operation of generating a signal conveying the second polygons.

30. (Amended) A method according to claim 1, further comprising the operation of producing rendered image data.

A7 Cont

31. (Amended) A method according to claim 30, further comprising the operation of generating a signal conveying the rendered image data.

32. (Amended) A method according to claim 31, further comprising the operation of recording the signal.

33. (Amended) A method according to claim 30, further comprising the operation of displaying an image using the rendered image data.

34. (Amended) A method according to claim 30, further comprising the operation of making a recording of the image data either directly or indirectly.

A7 Cont

35. (Amended) A method of generating polygons approximating at least a part of the surface of a three-dimensional object for use in rendering an image of the object, in which:

an initial polygonal model of the surface comprising a mesh of triangular polygons is processed to generate a mesh of cubic Bernstein-Bezier triangular surface patches approximating the surface; and

a further polygonal model of the surface is generated using the surface patches by dividing each triangular polygon in the initial polygon model into a plurality of notional triangular polygons and, for each notional triangular polygon, defining a triangular polygon for the further polygonal model using the cubic Bernstein-Bezier triangular patch of the corresponding triangular polygon in the initial polygonal model to calculate the positions in three-dimensional space of the vertices of the triangular polygon for the further polygonal model.

134

36. (Amended) Apparatus for processing data defining first polygons which approximate at least part of a curved three-dimensional surface to produce second polygons for use in rendering an image of the surface, comprising:

a patch definer for defining a respective surface patch for each first polygon to approximate the part of the object surface represented by the first polygon;

A2 Cont

a polygon divider for dividing each first polygon into a plurality of notional polygons;

a normal vector calculator for calculating a respective normal vector for each vertex of each notional polygon; and

a polygon definer for defining, for each notional polygon, a said second polygon for rendering using the surface patch of the corresponding first polygon and the calculated normal vectors for the vertices of the notional polygon to determine the positions of the vertices of the second polygon in three dimensions.

NE

37. (Unamended) Apparatus according to claim 36, wherein the first polygons approximating the curved three-dimensional surface are triangular, and the patch definer is operable to define a Bernstein-Bezier triangular patch as the surface patch for each first polygon.

38. (Unamended) Apparatus according to claim 37, wherein the patch definer is operable to define a cubic Bernstein-Bezier triangular patch for each first polygon.

135

39. (Unamended) Apparatus according to claim 36, wherein the patch definer comprises a control value calculator for calculating control values at control points for the first polygon to define the surface patch.

40. (Unamended) Apparatus according to claim 39, wherein the patch definer is arranged to set the control values for each vertex of the first polygon to zero.

41. (Unamended) Apparatus according to claim 39, wherein the patch definer is arranged to calculate the control values for control points along an edge other than vertices by determining the distance from the control point of the tangent plane at the nearest vertex in a predetermined direction.

42. (Unamended) Apparatus according to claim 41, wherein the predetermined direction is based on the direction of the normal at the nearest vertex alone.

43. (Unamended) Apparatus according to claim 41, wherein the predetermined direction is based on the normal at each vertex defining the ends of the edge on which the control point lies.

44. (Unamended) Apparatus according to claim 36, wherein the patch definer is operable to define a Herron patch for each first polygon.

A8

45. (Amended) Apparatus according to claim 36, wherein the polygon divider is arranged to perform the division in dependence upon an average area of at least some of the first polygons in a current frame of image data or a previous frame of image data.

NE

46. (Unamended) Apparatus according to claim 36, wherein the polygon divider is arranged to divide each first polygon into the same number of notional polygons.

47. (Unamended) Apparatus according to claim 46, wherein the polygon divider is arranged to determine the number of notional polygons by testing each first polygon to determine a division number therefor defining a number of notional polygons, and selecting the highest division number.

48. (Unamended) Apparatus according to claim 46, operable such that:

processing is performed for each frame of image data to be generated to determine a level of subdivision defining the number of notional polygons into which each first polygon is to be divided;

data defining the second polygons produced for rendering is stored for future use when it is generated for a level of subdivision for which data is not already stored; and

the stored data is used when a frame of image data is to be generated for a level of subdivision for which data is already stored.

136

49. (Unamended) Apparatus according to claim 36, wherein each said second polygon is a triangle.

50. (Amended) Apparatus according to claim 36, wherein the polygon definer is arranged to calculate vertices for each second polygon in dependence upon the distance of the surface patch above each vertex of the notional polygon and in dependence upon the calculated normal vectors for the vertices of the notional polygon.

A9

51. (Amended) Apparatus according to claim 50, wherein the polygon definer is operable to calculate the vertices for each second polygon by:

for each vertex of the corresponding notional polygon, setting the position of a vertex for the second polygon at the point which lies a distance from the vertex of the notional polygon equal to the distance of the surface patch above the vertex of the notional polygon in the direction of the normal vector calculated for the vertex of the notional polygon.

52. (Amended) Apparatus according to claim 50, wherein the distance calculator is arranged to calculate the distance using a forward differencing technique.

NE

53. (Unamended) Apparatus according to claim 36, further comprising a gap filler for filling gaps between the second polygons generated for rendering.

137

54. (Unamended) Apparatus according to claim 53, wherein the gap filler is arranged to fill gaps by moving vertices of second polygons generated for rendering.

55. (Unamended) Apparatus according to claim 53, wherein the gap filler is arranged to fill gaps by connecting vertices of second polygons to form further polygons for rendering.

NE

56. (Unamended) Apparatus according to claim 53, wherein the gap filler includes a gap identifier for identifying gaps to be filled using a database defining, for each edge of each first polygon, the relationship between the normals at each vertex of the first polygons which share the edge.

57. (Unamended) Apparatus according to claim 36, wherein the patch definer is arranged to define the surface patches by processing data in object space, and the polygon definer is arranged to define the second polygons by performing processing in viewing space.

58. (Unamended) Apparatus according to claim 36, further comprising a lighting value calculator for calculating lighting values for each second polygon by evaluating a polygon lighting equation for at least one of ambient, diffuse and specular light.

59. (Unamended) Apparatus according to claim 58, wherein the lighting value calculator is arranged to evaluate polygon lighting equations to define a respective second surface patch for at least some of the first polygons, and to calculate lighting values for the second polygons thereof using the second surface patches.

60. (Unamended) Apparatus according to claim 58, wherein the lighting value calculator is arranged to determine the number of notional polygons into which each surface patch is divided, and:

(i) if the number of notional polygons is less than a predetermined number, to calculate a lighting value for each vertex of the second polygons by evaluating the lighting equation for each vertex; and

(ii) if the number of notional polygons is greater than a predetermined number, to calculate a respective second surface patch for each first polygon, and to calculate a lighting value for each vertex of the second polygons using the second surface patches.

61. (Unamended) Apparatus according to claim 59, wherein the lighting value calculator is arranged to calculate the second surface patch for a first polygon by:

(i) evaluating the lighting equation to calculate a lighting value at a plurality of control points for the first polygon; and

(ii) calculating values defining the second surface patch such that the surface patch interpolates the lighting values calculated at the control points.

62. (Unamended) Apparatus according to claim 59, wherein the lighting value calculator is arranged to perform processing to use a second surface patch to calculate a lighting value for a vertex of a second polygon by calculating the lighting value using the height of the second surface patch above the first polygon at the vertex of a notional polygon which corresponds to the vertex for which the lighting value is to be calculated.

NE

63. (Unamended) Apparatus according to claim 62, wherein the lighting value calculator is arranged to use a forward differencing technique to calculate the height of the second surface patch above each vertex of each notional polygon.

64. (Unamended) Apparatus according to claim 36, further comprising an image renderer for producing rendered image data.

65. (Unamended) Apparatus according to claim 64, further comprising a display for displaying an image using the rendered image data.

---

66. (Amended) Apparatus for generating polygons approximating at least a part of the surface of a three-dimensional object for use in rendering an image of the object, comprising:

A10 cont

138

a mesh generator for processing an initial polygonal model of the surface comprising a mesh of triangular polygons to generate a mesh of cubic Bernstein-Bezier triangular surface patches approximating the surface; and

a polygon model generator for generating a further polygonal model of the surface using the surface patches by dividing each triangular polygon in the initial polygon model into a plurality of notional triangular polygons and, for each notional triangular polygon, defining a triangular polygon for the further polygonal model using the cubic Bernstein-Bezier triangular patch of the corresponding triangular polygon in the initial polygonal model to calculate the positions in three-dimensional space of the vertices of the triangular polygon for the further polygonal model.

A10 Cnl

67. (Unamended) A storage device storing computer-useable instructions for causing a programmable processing apparatus to become configured to perform a method as set out in at least one of claims 1 and 35.

NE

68. (Unamended) A signal conveying computer-useable instructions for causing a programmable processing apparatus to become configured to perform a method as set out in at least one of claims 1 and 35.

Claims 69-106 are non-elected.

139

69

~~107.~~ (Amended) A computer graphics processing method, comprising:

receiving data defining a three-dimensional computer model of at least a part of a curved three-dimensional object surface, the three-dimensional computer model comprising a plurality of representations, each of a respective portion of the object surface;

calculating an average area of at least some of the representations;

A11 Cont

determining the number of polygons to be generated to replace each respective representation in dependence upon the calculated average area; and

for each representation, generating the determined number of polygons for rendering to replace the representation, wherein the number of polygons generated for each representation is the same.

70.

~~108.~~ (Amended) A method according to claim ~~107~~ 69, wherein the average area is calculated using the at least some of the representations in a previous frame of image data.

71.

~~109.~~ (Amended) A method according to claim ~~108~~ 70, wherein the average area is calculated using the at least some of the representations in the frame of image data immediately preceding the frame for which the polygons are being generated for rendering.

72.

~~110.~~ (Amended) A method according to claim ~~108~~ 70, wherein the average area is determined using the coordinates of vertices of polygons rendered in the previous frame of image data.

140

73. ~~111.~~ (Amended) A method according to claim 69 ~~107~~, wherein the average area is calculated using the at least some of the representations in the frame of image data for which the polygons are being generated for rendering.

A11 cont

74. ~~112.~~ (Amended) A method according to claim 73 ~~111~~, wherein the average area is determined by transforming points defining the representations into the two-dimensional image coordinate system.

75. ~~113.~~ (Amended) A method according to claim 73 ~~111~~, wherein the average area is determined by transforming a volume bounding a plurality of representations into the two-dimensional image coordinate system.

114. Cancelled

76. ~~115.~~ (Amended) A method according to claim 69 ~~107~~, wherein the average area is used as the input to a look-up table to generate a value indicating the number of polygons to be generated to replace each respective representation for rendering.

A12

77. ~~116.~~ (Amended) A method according to claim 69 ~~107~~, wherein the number of polygons to be generated to replace each representation is determined in dependence upon the average area and also the curvature of at least one representation.

78. ~~117.~~ (Amended) A method according to claim 69 ~~107,~~ wherein each representation is a polygon.

79 ~~118.~~ (Amended) A method according to claim 69 ~~107,~~ wherein each representation is a parametric surface patch.

A12 Cont

80 ~~119.~~ (Amended) A method according to claim 79 ~~118,~~ wherein each representation is a Bezier patch, and the average area is determined using the control points defining the corners thereof.

81. ~~120.~~ (Amended) A method according to claim 69 ~~107;~~ further comprising the operation of rendering the polygons to produce rendered image data.

82. ~~121.~~ (Amended) A method according to claim 81 ~~120,~~ further comprising the operation of generating a signal conveying the rendered image data.

83. ~~122.~~ (Amended) A method according to claim 82 ~~121,~~ further comprising the operation of recording the signal.

84. ~~123.~~ (Amended) A method according to claim 81 ~~120,~~ further comprising the operation of displaying an image using the rendered image data.

A12 ure

85. ~~124.~~ (Amended) A method according to claim 81 ~~120~~, further comprising the operation of making a recording of the image data either directly or indirectly.

Claims 125-126 are non-elected.

A13

86. ~~127.~~ (Amended) Computer graphics processing apparatus, comprising:

a receiver for receiving data defining a three-dimensional computer model of at least a part of a curved three-dimensional object surface, the three-dimensional computer model comprising a plurality of representations, each of a respective portion of the object surface;

an average area calculator for calculating an average area of at least some of the representations;

a polygon number calculator for determining a number defining the number of polygons to be generated for rendering to replace each respective representation in dependence upon the calculated average area; and

a polygon generator for generating the determined number of polygons to replace each representation for rendering, so that each representation is replaced with the same number of polygons.

87. ~~128.~~ (Amended) Apparatus according to claim 86 ~~127~~, wherein the average area calculator is arranged to calculate the average area using at least some of the representations in a previous frame of image data.

143

88. ~~129.~~ (Amended) Apparatus according to claim 87 ~~128~~, wherein the average area calculator is arranged to calculate the average area using at least some of the representations in the frame of image data immediately preceding the frame for which the polygons are to be generated for rendering.

89. ~~130.~~ (Amended) Apparatus according to claim 87 ~~128~~, wherein the average area calculator is arranged to calculate the average area using the coordinates of vertices of polygons rendered in the previous frame of image data.

A13 Cont

90 ~~131.~~ (Amended) Apparatus according to claim 86 ~~127~~, wherein the average area calculator is arranged to calculate the average area using at least some of the representations in the frame of image data for which the polygons are to be generated for rendering.

91. ~~132.~~ (Amended) Apparatus according to claim 90 ~~131~~, wherein the average area calculator is arranged to calculate the average area by transforming points defining the representations into the two-dimensional image coordinate system.

92. ~~133.~~ (Amended) Apparatus according to claim 90 ~~131~~, wherein the average area calculator is arranged to calculate the average area by transforming a volume bounding a plurality of representations into the two-dimensional image coordinate system.

134. Cancelled

93. ~~135.~~ (Amended) Apparatus according to claim 86 ~~127~~, wherein the polygon number calculator is arranged to use the average area as the input to a look-up table to generate a value indicating the number of polygons to be generated to replace each respective representation for rendering.

A14

94. ~~136.~~ (Amended) Apparatus according to claim 86 ~~127~~, wherein the polygon number calculator is arranged to determine the number of polygons to be generated to replace each representation in dependence upon the average area and also the curvature of at least one representation.

95. ~~137.~~ (Amended) Apparatus according to claim 86 ~~127~~, wherein each representation is a polygon.

96. ~~138.~~ (Amended) Apparatus according to claim 86 ~~127~~, wherein each representation is a parametric surface patch.

97. ~~139.~~ (Amended) Apparatus according to claim 96 ~~138~~, wherein each representation is a Bezier patch, and the average area calculator is arranged to determine the average area using the control points defining the corners thereof.

145

140. (Unamended) Apparatus according to claim 127, further comprising an image renderer for rendering the polygons to produce rendered image data.

NE

141. (Unamended) Apparatus according to claim 140, further comprising a display for displaying an image using the rendered image data.

Claims 142-143 are non-elected.

144. (Unamended) A storage device storing computer-useable instructions for causing a programmable processing apparatus to become configured to perform a method as set out in at least one of claims 107 and 126.

NE

145. (Unamended) A signal conveying computer-useable instructions for causing a programmable processing apparatus to become configured to perform a method as set out in at least one of claims 107 and 126.

Claims 146-169 are non-elected.

---

102 ~~170.~~ (Amended) Apparatus for rendering a three-dimensional computer graphics model, comprising:

A-15

146

a receiver for receiving data defining a computer model of a three-dimensional object made up of a plurality of representations each of which models a respective part of the object;

a polygon generator for replacing each respective representation with the same number of polygons for rendering, and for storing data defining the polygons for subsequent use; and

A15 Cont

a renderer for rendering the polygons;

wherein, in use, the apparatus is controlled such that:

when the three-dimensional computer model is to be rendered for a second or subsequent time, stored polygon data is rendered if the stored data defines the required number of polygons for each representation, otherwise the polygon generator is controlled to replace each representation with the required number of polygons for rendering and to store data defining the polygons for subsequent use.

Claims 171-172 are non-elected.

103 ~~173~~. (Amended) Apparatus for processing data defining first polygons which approximate at least part of a curved three-dimensional surface to produce second polygons for use in rendering an image of the surface, comprising:

A16

patch defining means for defining a respective surface patch for each first polygon to approximate the part of the object surface represented by the first polygon;

147

dividing means for dividing each first polygon into a plurality of notional polygons;

normal vector calculating means for calculating a respective normal vector for each vertex of each notional polygon; and

polygon defining means for defining, for each notional polygon, a said second polygon for rendering using the surface patch of the corresponding first polygon and the calculated normal vectors for the vertices of the notional polygon to determine the positions of the vertices of the second polygon in three dimensions.

A16 cont

107 ~~174~~. (Amended) Apparatus for generating polygons approximating at least a part of the surface of a three-dimensional object for use in rendering an image of the object, comprising:

means for processing an initial polygonal model of the surface comprising a mesh of triangular polygons to generate a mesh of cubic Bernstein-Bezier triangular surface patches approximating the surface; and

means for generating a further polygonal model of the surface using the surface patches by dividing each triangular polygon in the initial polygon model into a plurality of notional triangular polygons and, for each notional triangular polygon, defining a triangular polygon for the further polygonal model using the cubic Bernstein-Bezier triangular patch of the corresponding triangular polygon in the initial polygonal model to calculate the positions in three-dimensional space of the vertices of the triangular polygon for the further polygonal model.

Claims 175-176 are non-elected.

105

~~177~~. (Amended) Computer graphics processing apparatus, comprising:

A11

means for receiving data defining a three-dimensional computer model of at least a part of a curved three-dimensional object surface, the three-dimensional computer model comprising a plurality of representations, each of a respective portion of the object surface;

means for calculating an average area of at least some of the representations;

means for determining a number defining the number of polygons to be generated for rendering to replace each representation in dependence upon the calculated average area; and

means for generating the determined number of polygons to replace each representation for rendering, so that each respective representation is replaced with the same number of polygons.

Claims 178-180 are non-elected.

REMARKS

Claims 1-68, 107-124, 127-141, 144, 145, 170, 173, 174 and 177 are presented for consideration.

Selected claims have been amended to better set forth Applicants' invention.

Due consideration and passage to issue are respectfully requested.

149